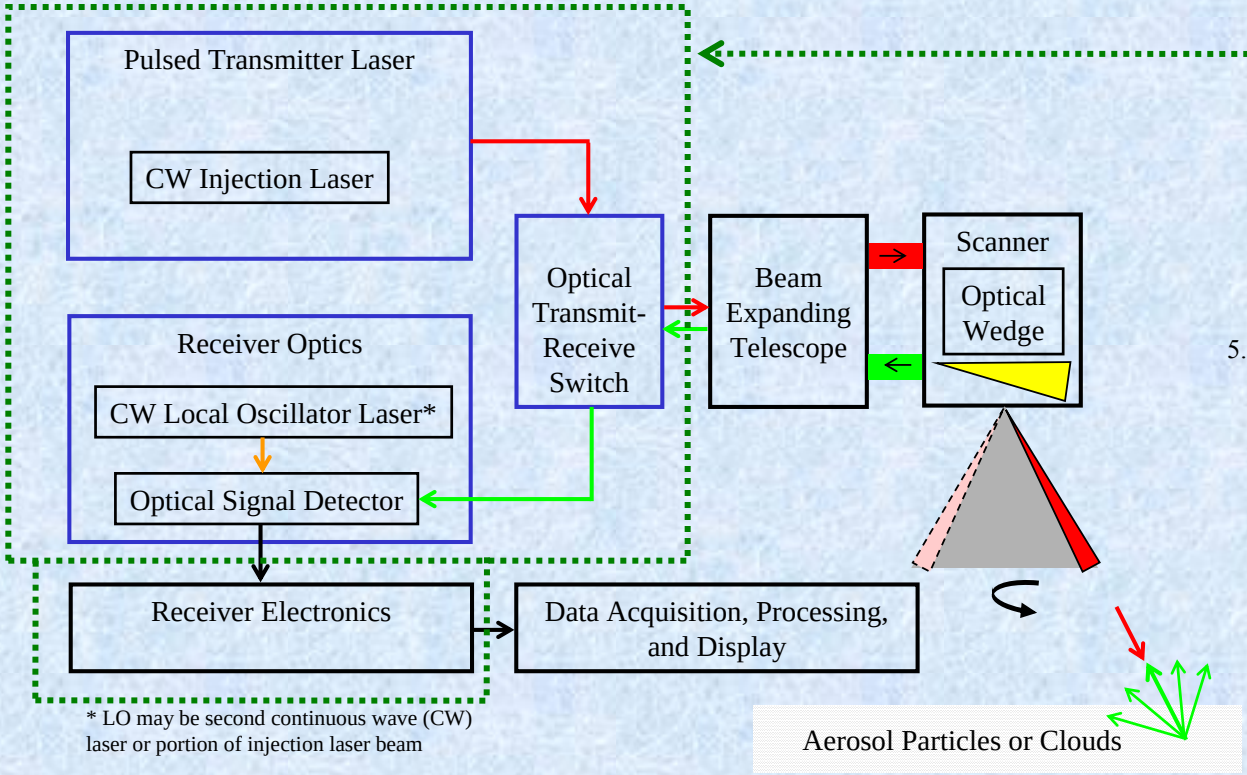
DAWN-AIR1
Doppler Aerosol WiNd lidar – Aircraft Version 1

NASA Langley's DAWN-AIR1 project began in fiscal year 2008 and is scheduled to end after fiscal year 2010. Its goal is to utilize the compact, robust DAWN transceiver to develop a complete pulsed coherent Doppler wind lidar system for the NASA DC-8 aircraft. The DAWN transceiver uses the 2-micron, Ho:Tm:LuLiF, pulsed laser technology developed at Langley for eventual global wind measurements from earth orbit. Langley has demonstrated a world record 1200 mJ of pulse energy with this technology. However, simulations of the space mission indicate a requirement of 250 mJ pulse energy. Since derating of technology is wise for space missions, DAWN was targeted at 250 mJ. DAWN-AIR1 is leveraging the significant laser and transceiver development that had occurred in NASA's Laser Risk Reduction Program (LRRP) and NASA Langley's DAWN project. NASA HQ SMD ESD is planning to use DAWN-AIR1 in its upcoming hurricane Genesis and Rapid Intensification Program (GRIP). DAWN-AIR1 has led to the follow-on project DAWN-AIR2. DAWN-AIR1 is funded by NASA's Science Mission Directorate (SMD) Earth Science Division (ESD) through the Research Opportunities in Space and Earth Sciences (ROSES) Airborne Instrument Technology Transition (AITT) program.



DAWN Transceiver (Transmitter + Receiver)
250 mJ/pulse, 10 pulses/sec.
5.9" x 11.6" x 26.5", 75 lbs.; 15 x 29 x 67 cm, 34 kg
(no telescope or scanner)